

January 26, 2021

Arthur Burbank
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

**Subject: Biological Selenium Removal Treatment Technology
 Water Treatment Pilot Study
 December 2020 Progress Report**

Dear Art,

This progress report summarizes key activities in December 2020 associated with Phase 2 of the Water Treatment Pilot Study located near Hoopes Spring. This Pilot Study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring.

Work related to the approved Phase 2 Pilot Study continues at the site in accordance with the *Final Phase 2 Pilot Study Work Plan and Sampling and Analysis Plan, Ultra-Filtration/Reverse Osmosis and Biological Selenium Removal Fluidized Bed Bioreactor Treatment Technology* (Phase 2 WP/SAP).

Identification of Deliverables and Data Transmittals

There were no outstanding deliverables or transmittals for the month of December. At the time of this report, we have received laboratory data for Week 147 and Week 149. Preliminary laboratory data are presented in Table 1. The field data for the Week 147, and 149 sampling events is summarized in Table 2.

Completed Activities

The following activities associated with the Phase 2 Pilot Study were completed in December 2020:

- Continued system operation and treatment of selenium.

The Treatment System Pilot (TSP) influent total selenium concentration for Week 147 was 161 ug/L and 167 ug/L for Week 149. The Treatment System Pilot effluent total selenium concentration for Week 147 was 10.5 ug/L and 8.7 ug/L for Week 149. The average removal efficiency for December was approximately 94% for total selenium removal.

The average flow of the TSP for the month of December was 1,500 gpm. Since full scale operations began in early December 2017 approximately 2.454 billion gallons of impacted water has been treated. The mass of selenium removed from December 2017 through December 2020 is approximately 2,691 pounds.

Upcoming Activities

The following activities associated with the Phase 2 Pilot Study are planned through January 2021:

- The system was shutdown on January 18th due to failure of the post treatment clarifier. A recent inspection found that the upper seal of the clarifier had failed, causing the system to short circuit which was the same failure as February 2019. The manufacturer of the system was contacted (Evoqua) and they have an upgrade for the upper seal that will eliminate this issue. Repairs are scheduled for February 11 and the system will be reseeded. Once the biology of the clarifier is replenished the system will be restarted.
- Additional plant maintenance has been scheduled during this down time in order to reduce future down time.
- Reinstate the system monitoring in accordance with the sampling and analysis plan when the system has been restarted and stabilized.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey Hamilton".

Jeffrey Hamilton
Environmental Engineer

cc:

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Table 1
Laboratory Results Focused Analyte List

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

Station >>		Influent	Ultra Filtration Backwash	Effluent	Influent	Ultra Filtration Backwash	Effluent
Sample ID >>		SC1220-LSSHS-IN001	SC1220-LSSHS-UFB001	SC1220-LSSHS-EF001	SC1220-LSSHS-IN002	SC1220-LSSHS-UFB002	SC1220-LSSHS-EF002
Date >>		12/9/2020			12/28/2020		
Analyte	Units						
General Chemistry							
Ammonia, as N	mg/L	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Biochemical Oxygen Demand	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
TSS	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
Nutrients							
Nitrate, as N	mg/L	0.44	0.21	0.3	0.47	0.16	0.14
Sulfide	mg/L	1 U	1 U	1 U	1 U		1 U
Phosphorus, Total	mg/L	0.0381	0.0368	0.0276	0.0575	0.0387	0.058
Metals and Metalloids							
Selenium, Dissolved	mg/L	0.162	0.0534	0.0112	0.179	0.06	0.00898
Selenium, Total	mg/L	0.161	0.0558	0.0105	0.167	0.0594	0.00868

Notes

Results presented are preliminary, and have not been validated at the time of this report.

U - Analyte not detected above the method detection limit (MDL).

J - Result is estimated.

Table 2
Field Water Quality Data

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Parameter >>	Dissolved Oxygen	ORP	pH	SC	Temperature	Turbidity
		Units >>	mg/L	mV	SU	umhos/cm	C	NTU
Station	Sample ID	Date						
Week 147								
Influent	SC1220-LSSHS-IN001	12/9/2020	9.9	226	7.03	502	14.96	0.2
Ultra Filtration Backwash	SC1220-LSSHS-UFB001	12/9/2020	8.64	220	6.87	219	13.6	2.2
Effluent	SC1220-LSSHS-EF001	12/9/2020	9.33	218	6.6	496	12.94	0.9
Week 149								
Influent	SC1220-LSSHS-IN002	12/28/2020	9.03	195	7.19	302	13.68	0.3
Ultra Filtration Backwash	SC1220-LSSHS-UFB002	12/28/2020	8.32	157	7.61	143	13.26	2.0
Effluent	SC1220-LSSHS-EF002	12/28/2020	7.51	191	7.03	326	12.97	0.7

Notes: